



Weather Type classification over Chile; patterns, trends, and impact in precipitation and temperature

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The Andes Cordillera induces considerable disturbances on the structure and evolution of the pressure systems that influences South America. Different weather types for southern South America are derived from the daily maps of geopotential height at 850hPa corresponding to a 42 year period, spanning from 1958 to 2000. Here we have used the ECWMF ERA-40 reanalysis dataset to construct an automated version of the Lamb Weather type (WTs) classification scheme (Jones et al., 1993) developed for the UK. We have identified 8 basic WTs (Cyclonic, Anticyclonic and 6 main directional types) following a similar methodology to that previously adopted by Trigo and DaCamara, 2000 (for Iberia). This classification was applied to two regions of study (CLnorth and CLsouth) which differ 20° in latitude, so that the vast Chile territory could be covered. Then were assessed the impact of the occurrence of this weather types in precipitation in Chile, as well as in the distribution of precipitation and temperature fields (reanalysis data) in southern half of South America.

The results allow to conclude that the precipitation in central region of Chile is largely linked with the class occurrence (concerning CLnorth) of cyclonic circulation and of West quadrant (SW, W and NW), despite of it's relatively low frequency. In CLsouth, for its part, it is verified that the most frequent circulation is from the west quadrant, although the associated amount of rainfall is lower than in CLnorth. There was also a general decrease of precipitation at local weather stations chosen in the considered period of study, particularly in austral winter.